

NEW ENGLAND NOTE

STUDIES ON NEW ENGLAND ALGAE II:
A SECOND STATION IN MAINE FOR
NITELLA TENUISSIMA (DESV.) KUETZING

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Collections of algae from the shallow, rocky shores of Crawford Pond and the streams which drain into it in Union, Knox County, Maine have yielded some uncommon taxa. These and the area have been described previously (Colt, 1977, 1985, 1994a). This paper reports the second collection from Maine of *Nitella tenuissima* (Desv.) Kuetzing 48 years after it was reported by William Randolph Taylor in 1921.

On the south shore of the large central island in Crawford Pond are several large embayments characterized by waters mostly less than a meter in depth, and with very gently sloping subsurface cobble-like areas composed of small stones. Near the shore line the stones tend to be free of silt and debris as a result of small but constant waves formed by winds typically from the southwest. Silt accumulates as the water deepens away from the shoreline, becoming the primary substrate by filling the interstitial spaces between the stones and covering them. *Nitella* plants were collected from silt at a depth of approximately 10 cm in the easterly portion of the major embayment. The *Nitella* population was of low density, consisting of a few scattered clumps spread over 10–15 square meters.

Nitella tenuissima is one of the smaller charophytes (Wood and Imahori, 1965), and the plants have a minute, delicate appearance. The plants from Crawford Pond, collected on August 9, 1969, (partial upper portions) range from 2.2 to 3.1 centimeters in height, and have the distinctive beaded appearance which is one of the characteristics of this species. The “beads” are composed of repeated (3–4 times) furcations of branchlets at the nodes.

The morphological characteristics of the Maine plants fit the descriptions given by Prescott (1962) and Wood and Imahori (1965), and are summarized in Table 1. The collected plants (*L. Colt CP8969-1,-2,-3,-4,-5,-6,-7*) were not yet fully mature, judging by the morphology of the gametangia, yet fit within the range

Table 1. Species Data Summary, *Nitella tenuissima*.

	Wood & Imahori 1965	Prescott 1962	Colt
Axis, Diameter	160–500 μ	NR*	180 μ below 1st branchlets
Internodes	3/4–5 times as long as branchlets	NR	2–3 times as long as branchlets
Number of fertile branchlets	ca. 6 in whorl	6 in whorl	5–6 usual, occasionally 9–11
Branchlets, comparative appearance	upper usually more compact than lower	glomerules formed, compact	glomerules formed, upper branchlets more compact than lower
Furcation	2–4 times	3–4 times	3–4 times
Primary rays	single, 1/3–1/2 length of branchlet	NR	single, 1/3–1/2 length of branchlet
Secondary rays	5–7, 1 central	NR	5–7, 1 central
Tertiary rays	3–6	NR	5–6, 1 central
Quarternary rays	3–4, 1 may divide again	NR	3–4, see dactyls
Quinary rays	3–4	NR	none
Number of cells per dactyl	2-celled	2-celled	2-celled
Dactyl number	3–4	NR	3–4
Dactyl mucus	none	NR	none
Basal cell	cylindrical or tapering to base of end cell	NR	cylindrical, with slight taper to base of end cell
End cell	conical, acute, 42–105 μ long, 21–32 μ wide at base	NR	conical, acute, 62–107 μ long, 17–25 μ wide at base
Gametangia	monoecious, sejoined or conjoined at 2nd–3rd branchlet nodes	plant monoecious	monoecious, sejoined or conjoined at 2nd–3rd branchlet nodes
Oogonia color	light or reddish brown	NR	light brown
Oogonia number	solitary	NR	most often solitary, few paired
Oogonia size	270–550 μ long incl. coronula, 225–510 μ wide	400 μ long, 260 μ wide	320–340 μ long, including coronula, 240–329 μ wide
Coronula	10 cells in 2 tiers, 25–46 μ high, 40–58 μ wide at base	10 cells in 2 tiers	10 cells in 2 tiers, 9–45 μ high
Antheridia	90–175 μ in diameter, stipitate	175 μ in diameter, stipitate	106–195 μ in diameter, stipitate

* NR indicates that this information was not reported by Prescott (1962).

of measurements provided by both Wood and Imahori and Prescott.

On a worldwide basis, *Nitella tenuissima* is reported from Europe, North Africa, Madagascar, the Azores, India, Japan, and from North America where it is known to range from southern Canada to the West Indies (Wood and Imahori, 1965).

Wood and Imahori (1965) state that *Nitella tenuissima* is common throughout New England, although a search of the literature (Colt, 1994b) indicates that it has not often been collected or reported from the region. The species has been collected once in Maine from Echo Lake on Mt. Desert Island (Taylor, 1921) and once from Lake Chocorua in New Hampshire (Collins, in Wood and Imahori, 1965). More collections of *Nitella tenuissima* have been reported from Massachusetts than any other New England state. Faxon, Morong (as *Nitella gracilis* Smith, and as *Nitella tenuissima*, *T. Morong* 32, 37), and Perkins are reported by Dame and Collins (1888) to have independently collected *Nitella tenuissima* from several ponds in Middlesex County, while Wood and Imahori (1965) report collections from Essex County by Collins (*Icon* 308) and by Robinson (as *Nitella transilis* Allen). Tindall and Sawa (1964) collected *Nitella tenuissima* in Morse Pond, Barnstable County, and Wood (in Wood and Imahori, 1965, *R. D. Wood* 2015) also collected it in Barnstable County. In Rhode Island Wood (*R. D. Wood* 1081), reports collecting this species from Larkins Pond in Washington County. It has also been collected by Faxon from Apponaug Pond and J. L. Bailey from Gorton Pond, both in Providence County, and by Wood and Palmatier from Newport County (Wood and Imahori, 1965). Robbins, and later Allen collected *Nitella tenuissima* in Rhode Island, but neither location is given by any of the authors (Halsted, 1878; Bennett, 1888; Wood and Imahori, 1965) listing the collections.

Whereas the Crawford Pond collection does not substantiate the comment by Wood that the plant is common throughout New England, it lends credence to the suggestion that *Nitella tenuissima* might be more widely distributed than has been reported heretofore. The more than 1600 articles known to report the collection of fresh water algae in New England (Colt, 1994b) suggest that such collections have tended to be primarily from scattered locations. Records of algal collections from Maine, New Hampshire, Vermont, Massachusetts and Rhode Island can only be

described as geographically spotty and primarily a function of the interests and activities of collectors since the first published report of algae in New England by Hitchcock in 1829. The only systematic state-wide effort was in Connecticut, first by Conn (1905), Conn and Webster (1908), and then later by Hylander (1922a, 1922b, 1924, 1925, 1928). Neither Conn and Webster (1908) nor Hylander (1928) list any of the Characeae among the algae of Connecticut. Hylander notes the exclusion by suggesting that the Characeae belong in a separate group among the Thallophytes because of their "complicated and advanced types of reproductive structures." Furthermore, although *Nitella tenuissima* was occasionally assigned to *Nitella gracilis* or *Nitella transilis* by early workers (Wood and Imahori, 1965), neither of these species have been reported from Connecticut.

It is likely that because of the small size of *Nitella tenuissima* plants and its growth habit, "in silt with only the tips of the branches emergent," (Prescott, 1962), it would tend to escape notice by most collectors unless they were actively searching for it. Judging by the few plants at the site in Crawford Pond, *Nitella tenuissima* is probably relatively scarce even in suitable habitats. Then too, the Characeae have not enjoyed a great deal of attention among New England phycologists over the years, and many plants have, in all likelihood, been by-passed during searches for other algae.

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